

FORMATIVE ASSESSMENT

The Arizona Department of Education - Assessment Section along with many dedicated Arizona educators and members of the technology staff at Arizona State University have been busy developing a wonderful new instructional tool for all Arizona educators.

Teachers will soon be able to access the Formative Assessment Test Item Bank through the IDEAL website. The item bank will continue to expand and improve over time, providing teachers with hundreds of questions that are strictly aligned with the Arizona State Standards.

Until the item bank becomes operational, the Arizona Department of Education is creating strand and concept level quizzes that teachers can download, print, and use in their classrooms.

What is formative assessment?

Assessment for learning that provides:

- Insight on students' strengths and conceptual errors in relation to specific course concepts
- Guidance to improve student understanding
- A means of monitoring progress in learning
- Diagnostic information concerning students' understanding of concepts
- Feedback to the instructor about the effectiveness of instructional activities

Any task that provides timely instructional feedback to students on their learning achievement is considered formative. Oral presentations, posters, portfolios, group projects, bell work assignments, tests, and quizzes can all be formative.

As you use these quizzes, be sure to discuss the questions and the student responses with your students - guiding, teaching, assessing, and re-teaching when necessary.

The teacher can use the strand and concept level quizzes:

- To determine individual strengths and weaknesses and develop strategies to address those weaknesses
- To assess student understanding of the standards during the teaching of units
 - Use items from the quizzes as bell-work
 - Use entire quiz or selected items for in-class group or teacher-led assignments
 - Use as class quizzes or tests to assess student understanding of the specific performance objectives being taught

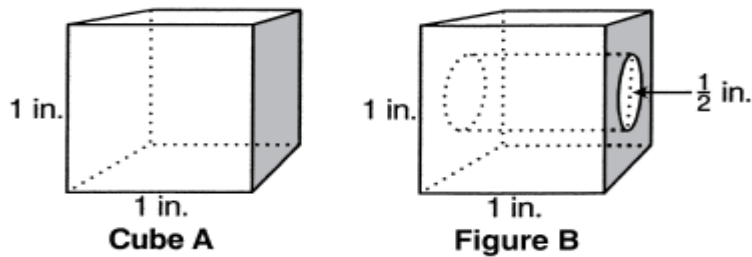
Please contact Chris Paulino at chris.paulino@azed.gov with comments or questions. This is a "work-in-progress" and, as such, will continue to be modified and improved. Your comments are essential as we strive to provide all Arizona educators with the tools and resources they need to be successful in the classroom.

We at the Department of Education extend our deepest appreciation for all you do every day in the classroom to provide Arizona youth the best possible education.

FORMATIVE ASSESSMENT
High School Mathematics
Strand 4 – Concept 4: Measurement
Units of Measure – Geometric Objects

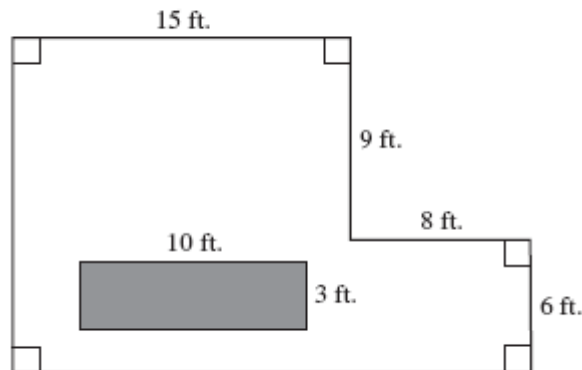
Directions: Please answer the following questions. Mark your answer by shading in the circle which corresponds to your response.

1. Cube A is a 1-inch solid cube. Figure B shows a 1-inch solid cube after a cylindrical hole has been drilled through its center. The diameter of the cylindrical hole is $\frac{1}{2}$ inch, and its height is perpendicular to two opposite faces of the original cube, as shown in the diagram.



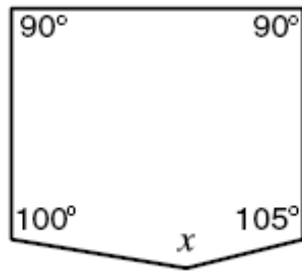
- a. What is the total surface area of Cube A?
b. What is the total surface area of Figure B? Show your work or explain how you obtained your answer.

2. How many square feet of carpeting are needed to cover the floor of the room represented by the drawing below? Note that the shaded region is to be left uncovered to leave space for the construction of a built-in trophy case with a rectangular base.



- | | |
|-------------------------------------|-------------------------------------|
| <input type="radio"/> A 125 sq. ft. | <input type="radio"/> C 273 sq. ft. |
| <input type="radio"/> B 303 sq. ft. | <input type="radio"/> D 243 sq. ft. |

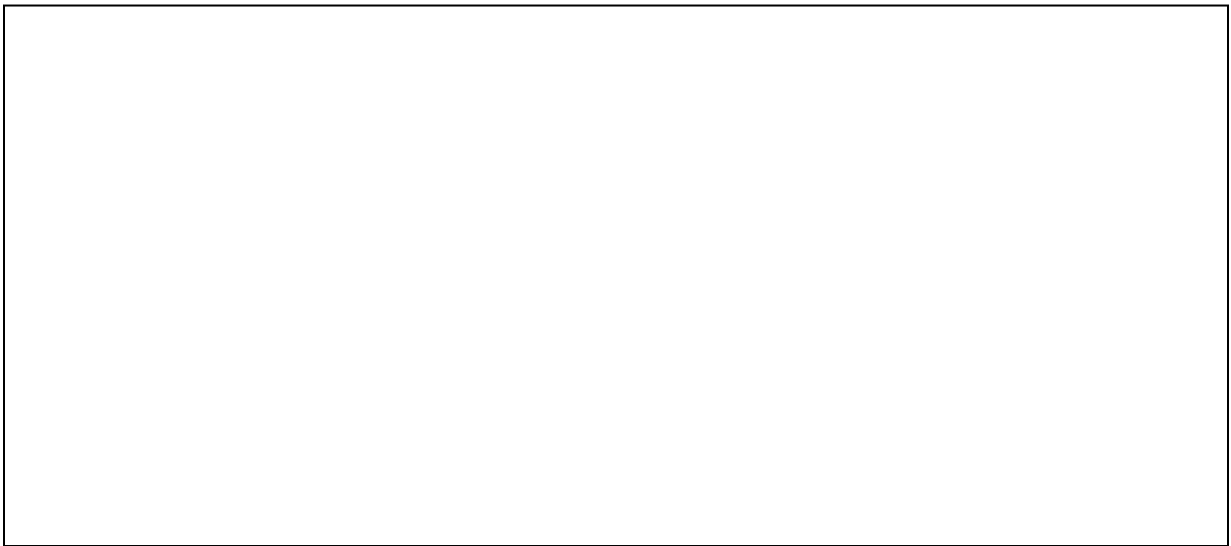
3. What is the value of x in the pentagon below?



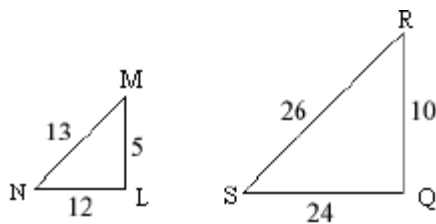
- ☐ A 90°
☐ B 155°

- ☐ C 245°
☐ D 335°

4. Draw a regular hexagon. Label the vertices, congruent sides and congruent angles appropriately. What are the measures of the angles of the hexagon?



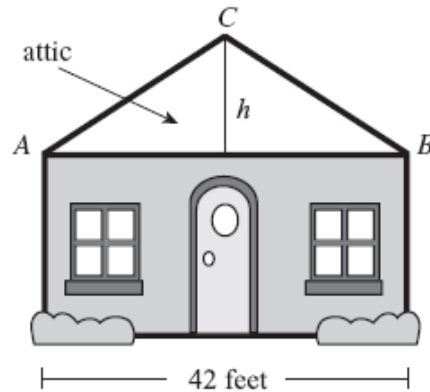
5. The sides of $\triangle LMN$ have been doubled to create $\triangle QRS$.



How does the area of $\triangle QRS$ compare with the area of $\triangle LMN$?

- ☐ A The area of $\triangle QRS$ is four times as big as the area of $\triangle LMN$.
☐ B The area of $\triangle LMN$ is three times as big as the area of $\triangle QRS$.
☐ C The area of $\triangle LMN$ is two times as big as the area of $\triangle QR$.
☐ D The area of $\triangle LMN$ is five times as big as the area of $\triangle QRS$.

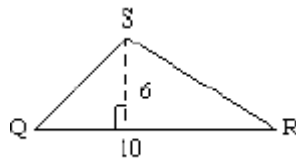
6. The figure below shows a house with an attic, represented by $\triangle ABC$ with $AC = BC$. The distance from A to B is 42 feet. The slope (commonly referred to as the pitch) of the roof is $\frac{2}{3}$.



What is the height, h , of the attic?

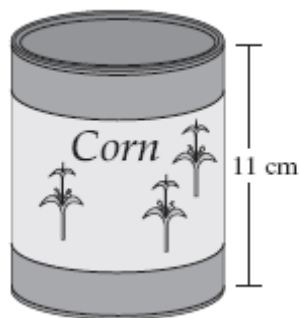
- ☐ A 14 feet ☐ C 32 feet
☐ B 28 feet ☐ D 63 feet

7. The area of $\triangle QRS$ is 30 square units. If all the sides of $\triangle QRS$ were multiplied by 2, what would the area of the new, larger triangle be?



- ☐ A $120\sqrt{2}$ ☐ C 60
☐ B $60\sqrt{2}$ ☐ D 120

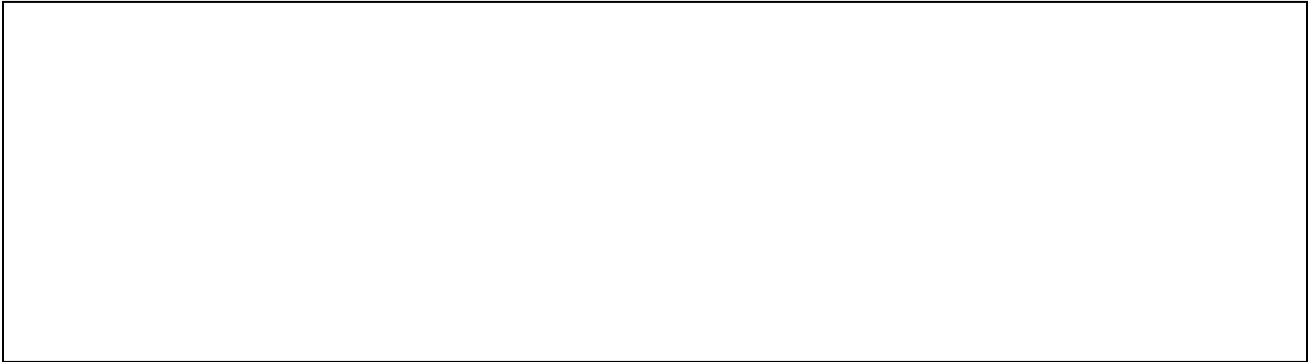
8. The can of corn shown below is a right circular cylinder with a height of 11 cm. The volume of the can is 486 cubic centimeters.



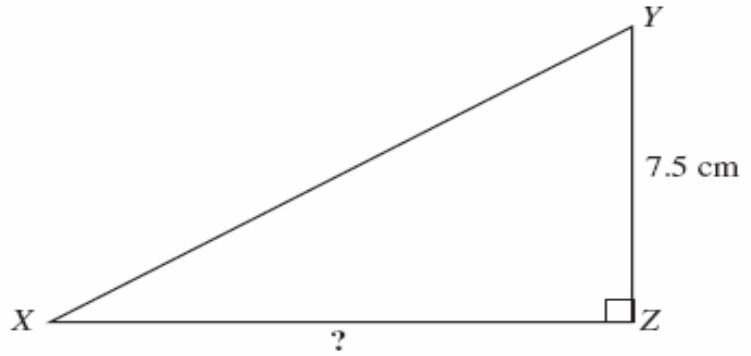
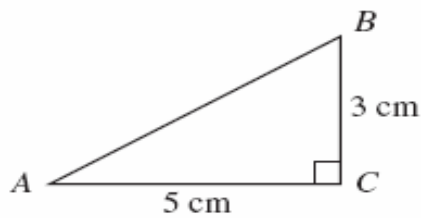
What is the approximate radius of the can of corn?

- ☐ A 1.3 cm ☐ C 3.8 cm
☐ B 7.0 cm ☐ D 14.1 cm

9. Using the figure and the dimensions from the previous problem (#8), find the area of the paper needed to print a label for the can if the label covered only 9 cm of the lateral surface of the can? If the can was made entirely of aluminum, what would be the area of the aluminum required to construct the can?



10. In the figures shown below, $\triangle ABC$ is similar to $\triangle XYZ$.

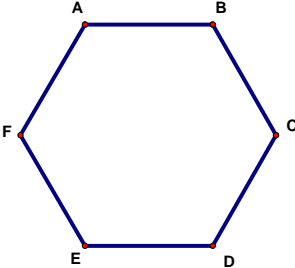


What is the length of XZ?

- ☐ A 2.0 cm
- ☐ B 4.5 cm

- ☐ C 12.5 cm
- ☐ D 22.5 cm

HIGH SCHOOL MATHEMATICS
Strand 4 – Concept 4: Measurement – Units of Measure
Answer Sheet

1 MA	<p>Response Cues:</p> <p>a. The total surface area of Cube A is 6 sq in.</p> <p>b. The total surface area of Cube B is $6 + \frac{3}{8}\pi$ sq in</p>	S4 C4 PO3
2 MA	D	S4 C4 PO1
3 Vi	B	S4 C4 PO8
4 MA	 <p>Each angle measure is 60°. Marks should be placed on each side indicating they are all congruent. Marks should be placed in each angle indicating they are all congruent.</p>	S4 C4 PO8 S4 C1 PO5
5 AZ	A	S4 C4 PO4
6 MA	A	S4 C4 PO9
7	D	S4 C4 PO4
8 MA	C	S4 C4 PO2
9 MA	<p>Response Cues:</p> <p>The approximate radius is 3.8 cm. The area of the paper needed to make a label is approximately 212 sq cm (lateral area using 9 cm as the height). The amount of aluminum needed to construct the can is approximately 348 sq cm (the total surface area of the can).</p>	S4 C4 PO2 S4 C4 PO3
10 MA	C	S4 C4 PO10

MA – This product contains material that has been released to the public by the Massachusetts Department of Education. The MDOE has not endorsed this product..

AZ – These items have been created by Arizona educators.

